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**PLATE FOR INSERTION INTO THE GROUND**

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PLATE FOR INSERTION INTO THE GROUND

[Bodenplatte]

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Claims

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1. Plate for insertion into the ground, characterized by the fact that the essentially planar plate (1) has a lateral edge (2) that is provided at least in part with acutely angled hooks (3) or an acutely angled flange (4) capable of being brought into a state of engagement with the leading edge of a spade.

2. Plate for insertion into the ground in accordance with Claim 1, characterized by the fact that the plate (1) possesses a fold (5) or a series of perforations in the region of the root of the hooks or the edge of the flange.

3. Plate for insertion into the ground in accordance with Claim 1 or 2, characterized by the fact that it is a stiff or flexible plastic material.

4. Plate for insertion into the ground in accordance with Claim 1 or 2, characterized by the fact that it is a metal material.

5. Plate for insertion into the ground in accordance with Claim 4, characterized by the fact that the metallic material is coated with plastic.

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\* [Numbers in the right margin indicate the pagination of the original text.]

6. Plate for insertion into the ground in accordance with Claims 3 through 5, characterized by the fact that it is a foil material.

7. Plate for insertion into the ground in accordance with Claims 3 through 6, characterized by the fact that it has stiffening ribs.

8. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that the edge region (6) of the plate (1) can be bent in a planar or curved manner in such a way that the plate (1) possesses an essentially S-shaped form in its cross section (Figures 6-8), whereby this edge region is located opposite the hook or the flange's lateral edge (2).

9. Plate for insertion into the ground in accordance with Claim 8, characterized by the fact that the edge region (6) is bent at a right angle or at an acute angle.

10. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that the edge region (6) has securing hooks (10) and/or securing eyelets (11) (Figures 10 and 11).

11. Plate for insertion into the ground in accordance with one of the preceding claims, characterized by the fact that a double plate arrangement with a spade pouch (7) is provided for it (Figure 9).

12. Plate for insertion into the ground in accordance with Claim 11, characterized by the fact that the double plate arrangement is constructed from one single piece of material.

13. Plate for insertion into the ground in accordance with Claim 11 or 12, characterized by the fact that the double plate arrangement is constructed symmetrically in terms of its cross section.

14. Plate for insertion into the ground in accordance with Claims 8 through 13, characterized by the fact that the edge region (6) of the plate (1) has openings.

The invention pertains to a plate for insertion into the ground, especially for use in horticulture in order to set up the demarcations of plant cultivation beds, etc.

A conventional arrangement is a plate that, in the simplest case, is buried to the desired depth and represents an underground or above-ground demarcation, depending on the depth to which it is buried in the ground. Although thin flexible plates can be used in this way, a significant disadvantage is the previously time-consuming process of digging up the ground and destroying the vegetation in the excavation region of the earth.

In the case of an additionally known embodiment, the plate is constructed in a comparatively thick manner in order to achieve high mechanical stability. The plate is pushed, or hammered, into the soil without deforming the plate. A disadvantageous feature is the difficult introduction of the plate [into the soil] as a result of its thick construction and the danger of its

breaking up. These known plates of high mechanical stability necessitate a lot of material and are therefore not inexpensive to manufacture. In addition to this, they are comparatively heavy because of their thick construction and they are correspondingly unwieldy during their transportation to the site and introduction into the soil.

The objective of the present invention is the creation of a plate for insertion into the ground that is simple in terms of construction, and that has a wide variety of usage possibilities in the soil, and that is not only capable of being manufactured simply but that is also light and can be introduced into the soil using simple devices. /5

The problem that forms the underlying basis of the invention is solved by way of the fact that the plate, which is essentially planar, has a lateral edge with, at least in part, acutely angled hooks or an acutely angled flange capable of being brought into a state of engagement with the leading edge of a spade.

In an advantageous further development of the invention, the plate can possess a fold or a series of perforations in the region of the root of the hooks or of the bent edge.

In particular, a stiff or flexible plastic material is provided for it.

In an alternative embodiment, however, metal can also be used, especially one that has been coated with plastic.

Foil material can also be provided for it.

Stiffening ribs can be provided in order to achieve greater rigidity, whereby these extend, in particular, in the direction of insertion of the plate.

The plate's edge region, which is located opposite the hook or flange's lateral edge, can expediently be bent over in a planar or curved manner so that the plate for insertion into the ground possesses an essentially S-shaped form in terms of its cross section, and it can have openings for vegetation to grow through.

In particular, the edge region is bent over at a right angle or at an acute angle. /6

In a further expedient embodiment of the invention, the edge region can additionally have securing hooks and/or securing eyelets so that, for example, the securing guy ropes of tents or plastic covering awnings can be anchored down advantageously once the plate has been introduced into the soil. The guy ropes can be secured before introducing the plate into the soil in order to be able to subsequently introduce the plate, which can also be constructed in a narrow strip, completely into the soil if required.

In the case of an especially expedient embodiment, the plate for insertion into the ground is constructed in a double plate arrangement with a spade pouch.

The double plate arrangement can be formed from one single piece of material, and it can be symmetrical in terms of its cross section.

A plate, which can be manufactured with ease and which permits the attachment of a spade at its lower end, is accordingly created as a result of the invention. Before introducing it into the soil, the plate is applied to a spade, whereby the leading edge of the spade engages with the acutely angled flange or hooks of the lateral edge of the plate. The spade, together with the applied plate, is then pushed into the soil by means of foot pressure, whereby the plate is inserted into the soil and it is exposed essentially only to tensile forces during this insertion process. Since the plate is stressed only by tensile forces, the plate can be relatively thin, lightweight, and optionally flexible, without making the insertion process difficult or breaking up the plate during insertion. The plate is pushed in to the desired depth in accordance with the purpose for which usage is intended. For the majority of standard applications, the plates have a somewhat shorter height relative to the spade, which functions as an introducing tool, so that, for utilizing the spade, the weight of the foot acts on the spade in the case of a parallel arrangement of plates. The withdrawal of the plate is made difficult as a result of the bent portion anchored in the earth, so that adequate retention in the soil is ensured. Use can be made not only of a standard spade as an introducing tool, but also of a special spade that has been adapted to the shape of the plates, especially in the region of the flange or hook construction at the bottom. The flange can be semi-round, acutely angled, or even rectangular, and it does not need to extend across the entire breadth of the plates. The form of the plates can be rectangular, square, strip-like and/or rounded off or flattened off at the top. The upper lateral edge can also have ornamental shapes, and the height of the plate can exceed the height of the blade of the spade if the plate is constructed in a flexible manner. In this case, the plate is pushed out laterally when it is being pushed into the soil. Since the plate is capable of being constructed in a comparatively thin manner because of the fact that it is subject only to tensile stressing, it can be introduced into substrates of even greater consistency, e.g. earth, sand, gravel, peat, liquid concrete, mud, etc. If, in addition to the flange or hook construction at the bottom, the plate has an angular rounded off or flat flange at the top so that an essentially S-shape is formed, then the plate can be inserted into the earth sufficiently far that the upper edge region is in a state of pre-tension and, as a result, additional retention arises for the plate. Naturally, insertion into the soil is possible not only in the vertical direction but oblique insertion or overlapping application is also possible. The latter is favored by the comparatively thin construction of the plate. The flange or hook construction in accordance with the invention can be produced beforehand by the manufacturer. However, it is especially advantageous to premanufacture the plate in a flat planar manner with a fold or perforation line at the location of the flange, and to bring the plate to the usage site in this form. The user himself then bends over the fold or perforation location just before use.

As can be seen, various types of usage are conceivable, e.g. in a restricting demarcation for underground root propagation, or as a mole- or vole-stopping device. In the case of a flange at

the top, the plate can serve as a device for repulsing surface water or as a plate for a garden path when the upper flange is constructed with a large surface area. The invention preferably finds use for enclosing tombs or plant cultivation beds. If the plate is introduced only partially into the soil, it can serve as a device for producing a seal between wire fencing and the surface of the earth. In the case of a strip-like plate with an upper bored-out hole, the plate can find use as a tent peg. In other cases of its application, the invention can be considered for vegetation-free edge strips (plates, or bent over in a rectangular manner) and, on natural slopes, as a means for repulsing water under the surface of the earth or as a means for stopping erosion.

The invention will be elucidated in more detail below by means of embodiment examples with reference being made to the drawings. The following aspects are shown.

Figure 1 shows a plate in accordance with the invention with a continuous flange at the bottom in a schematic illustration;

Figure 2 shows a plate with a flange that does not extend across the entire breadth of the plate;

Figure 3 shows a plate that is similar to Figure 2, whereby the bottom edge region is curved and adapted to the leading edge of a conventional spade;

Figure 4 shows a plate during the process of inserting it into the earth, whereby the plate is constructed in accordance with Figure 1 and it has been applied to a spade;

Figure 5 shows an inserted plate in a schematic illustration;

Figure 6 shows a schematic view, which is similar to Figure 5, of an inserted S-shaped plate;

Figures 7 and 8 show further embodiments of a plate in accordance with the invention;

Figure 9 shows an embodiment of a double plate arrangement with an inner spade pouch;

Figures 10 and 11 show plate embodiments with upper hooks or securing eyelets; and

Figures 12 and 13 show plates with upper ornamental edges.

The embodiment shown in Figure 1, is a plate 1 constructed in a flat planar foil-like manner, and it has a lower rectilinear fold 5. It is brought to the usage site in planar form. Prior to use, the user bends over the lower lateral edge 2 of the plate 1 in order to create an acutely angled flange 4 for engagement with a spade 9. In accordance with Figure 4, the plate is then inserted into the soil until it has reached the desired depth. The spade 9 is then withdrawn and this leaves behind in the soil a plate 1 as shown by way of example in Figure 5. The acutely angled flange 4 prevents the plate from being pulled out with the spade. However, the flange 4, which also serves as a barbed hook, is not so rigid that withdrawal of the plate 1 is ruled out completely in the event of incorrect positioning. This flange is bent back in the case of a more intense withdrawal force.

Thus rapid and facile insertion of a plate into the soil and adequate retention of the plate in the soil is possible on the one hand and, on the other hand, withdrawal and shifting to a new place is also possible despite this adequate retention in the normal position.

The embodiment shown in Figure 2 of a plate 1 is basically the same as that in accordance with Figure 1 but a continuous flange 4 has not been provided for it but, rather, the lower lateral edge 2 has hooks 3 that run at an acute angle to the basic plane of the plate 1 and they can be brought into a state of engagement with a spade.

The embodiment that is illustrated in Figure 3 corresponds to that in accordance with Figure 2, and it has a curved lower edge that has been adapted to the leading edge of a spade.

Embodiment examples are shown in Figures 6 through 8, whereby these examples have an upper edge region 6 in addition to the flange 4 at the bottom, so that the plate is bent in an S-shaped manner. The flange can be flat in this regard, and it can subtend an acute angle (in accordance with Figure 6) or a right angle (in accordance with Figure 7) to the basic plane of the plate 1, but it can also be curved as shown by way of example in Figure 8. The embodiment examples in accordance with Figures 6 and 8 permit pre-tensioning (counter-tensioning) in the event of appropriately deep penetration of the plate into the soil, whereby the edge, which is located at the very front of the upper edge region 6, is in a state of engagement with the soil and, as a result, not only is retention of a plate in the soil possible in a more securely braced manner, but good sealing is possible in the front-edge region. The embodiment example in accordance with Figure 7 is preferably inserted completely into the soil until the upper right angled edge region 6 lies on the soil. A plate of this type serves primarily for the construction of vegetation-free edge strips, of, e.g., a meadow, a plant cultivation bed, or a tomb. However, the plate can also find use as a garden paving plate if the upper edge region 6 is constructed so as to have a large surface area.

The embodiment shown in Figure 9 basically corresponds to the structure of the plate in accordance with Figure 7, but in a double arrangement. The double plate arrangement is manufactured in one single piece of material, and it is constructed symmetrically and it has an inner spade pouch 7 into which the blade of a spade can be introduced. When arranged together in their entirety, such plates serve for the construction of a wider vegetation-free edge strip. The spade pouch 7 can also find use as a run-off channel or drainage canal when in an overlapping arrangement of several plates.

The embodiment shown in Figure 10 has an upper edge region 6 that is constructed in securing hooks 10. The hooks are capable of serving e.g., as an anchoring arrangement for the guy ropes of tents or plastic covering awnings.

The embodiment example in accordance with Figure 11 provides securing eyelets 11 as the securing devices in the upper edge region of the plate, whereby a rope can be threaded

through the eyelets, whereas the embodiment examples in accordance with Figures 12 and 13 possess an ornamental edge.

Fig. 1

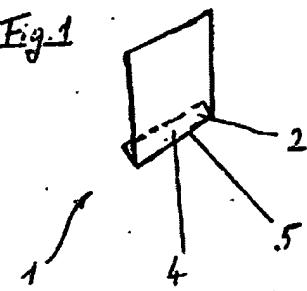


Fig. 2

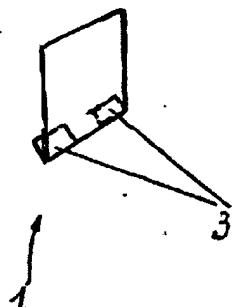


Fig. 3



Fig. 4

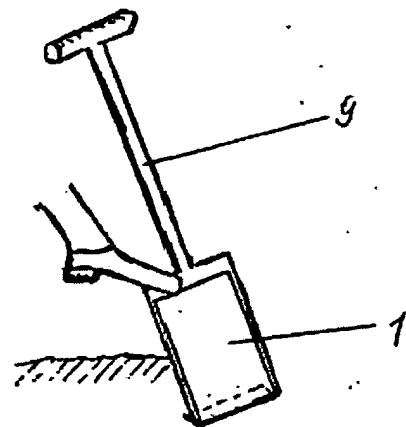


Fig. 5

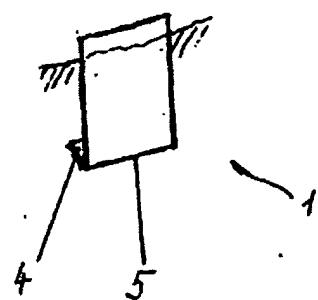


Fig. 6

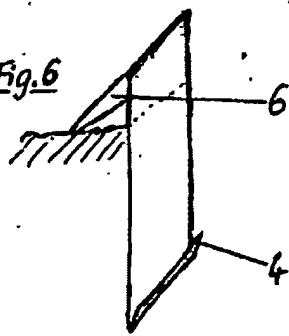
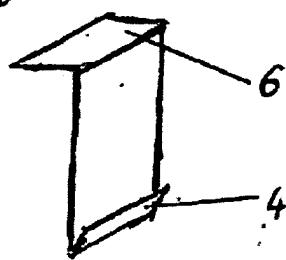
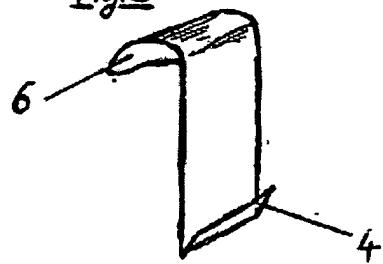
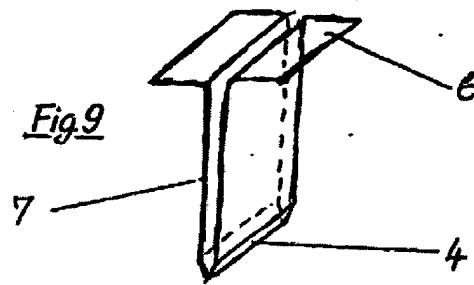
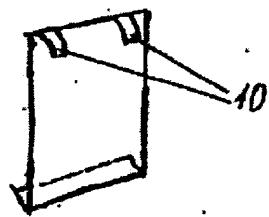
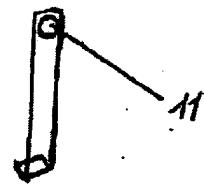
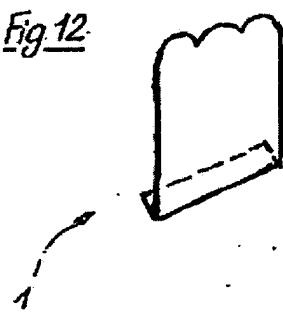


Fig.7Fig.8Fig.9Fig.10Fig.11Fig.12Fig.13